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ABSTRACTS

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(Pages refer to the Japanese originals of this volume unless otherwise noted.)

Studies on Ascorbic Acid. VII.

The Relation between Ascorbic Acid and Vitamin A. (I).

By Kichinosuke FUJIMURA.

(Laboratory of Nutritional Chemistry, Dept. of Agricultural and Chemical Institute, Kyoto Imperial University;
Received January 23, 1942.)

Chemical Studies on Tomato Ring Mosaic Virus.

I. The Isolation of Crystalline Protein Possessing the General Properties of Tomato Ring Mosaic Virus.

By Matsunosuke KITAGAWA and Satoru AKUNE.

(Institute of Agricultural Chemistry, Faculty of Agriculture, Kyushu Imperial University, Fukuoka; Received December 22, 1941.)

On the Slightly Podzolized Brown Forest Soil in Tonka Prefecture, North Manchuria.

By R. KAWASHIMA, M. NAGATA, S. TANAKA, and G. TŌYAMA.

(Agr. Chem. Laboratory, Kyûshû Imp. University; Received January 9, 1942.)

Butyric Acid Fermentation. (Part I.)

(pp. 339～350)

By Toshinobu Asai, Eitaro Komatsu,
and Noboru Miyaji.

(Agr. Chem. Laboratory, Tokyo Imperial University; Received January 19, 1942.)

Summary

(1) A detailed morphological and cultural diagnosis is given of three strains of butyric acid-producing Clostridia, isolated from soils and sweet potato.

(2) Their nomenclature and taxonomy are discussed, and reasons are given for classifying one of the strains as belonging to a variety of *Clostridium butyricum* Prazmowski, and the other two strains, by their greater production of butanol and other facts, as belonging to a new species of the Genus *Clostridium* Prazmowski.

The new names given for the three strains: *Clostridium butyricum* var. *immobile*, *Clostridium butanologenes* nov. sp. and *Clostridium butanologenes* nov. sp. var. *intermedium* nov. var.

(3) *Clost. butyricum* var. *immobile* shows a remarkable denaturation during cultivation, the spore-forming ability becomes strongly reduced and its typical sporangial cell forms are very rarely noticeable. This strain produces large amounts of butyric acid from glucose (over 30% yield to the consumed sugar), so this may be used for the industrial purpose of butyric acid manufacture.

(4) *Clost. butanologenes* nov. sp. produces higher yields of butanol from glucose and its technical application is also suggested.

(5) *Clost. butanologenes* nov. sp. var. *intermedium* nov. var. stands intermediately in the biochemical characters, viz., it chiefly produces butyric acid and butanol.

(6) A quantitative comparison was made of the products of fermentation of glucose and corn mash by these three strains.

Dietary Studies on the Increase of Utilizing Value of Northern Farm Animals.

IV. On the Fox Feed.

(pp. 351～359)

By E. Takahashi and K. Shirahama.

(Department ef Agriculture, Hokkaido Imperial University;
Received January 6, 1942.)

Der bakterielle Abbau der Aminosäuren. II. Mitteilung.

Einige Effkcte auf die Bildung der oxydativen *l*-Aminosäure-Desaminase in *Bac. proteus vulgaris* HAUSER.

(SS. 360～364)

By Teijirô UYEMURA.

(Wissenschaftl. Laboratorium von Ch. Takeda & Co. Ltd., Osaka.

Eingegangen am 26. 11. 1941.)

Studies on the Manufacture of the Artificial Baits from Fish-viscera.

I. Preliminary Experiments.

(pp. 365～368)

By Eiichi TANIKAWA and Fumio YAMAZAKI.

(Hakodate College of Fisheries; Received January 26, 1942.)

Artificial baits were made from the internal organ of land animals, but the authors have tried to make them from that of fishes and compared their effects. Results were as follows:

TABLE.

Name of samples	Wt. of dried substance (g)	Wt. of CaO in dried substance (g)	Wt. of CaO / Wt. of dried substance	Average	Remaining CaO in the substance (%)	Effects of deliming (%)
After liming (as control)	6.80 8.30	0.2040 0.2945	3 00 3.55	3.28	100	
Commercial "Oropon"	6.35 6.45	0.0590 0.0585	0.929 0.905	0.917	28.0	72.0
Artificial baits from salmon viscera	8.75 8.25	0.0935 0.0785	1.070 0.951	1.010	30.8	69.2
A. B. from cod viscera	7.48 7.00	0.0898 0.0610	0.800 0.873	0.836	25.5	74.5
A. B. from herring-viscera	7.16 7.50	0.0554 0.0590	0.774 0.786	0.780	24.1	75.9
Ammonium sulphate	6.03 6.58	0.0305 0.0410	0.500 0.624	0.562	17.2	82.8

The authors are carrying on further studies based on the above mentioned results.

Studies on the Vitamins of Fish Livers. (Part IV.)

Lactoflavin Content of Fish Livers.

(pp. 369～378)

By Hideo Higashi and Shigeo Iseki.

(Imperial Fisheries Experimental Station, Tokyo, Japan; Received January 16, 1942.)

The present authors determined the lactoflavin content of livers of several species.

The determination of lactoflavin was carried out by the following method. The livers are minced and dried over the water bath under agitation. The dried livers are extracted with ether to remove the ether-soluble matter. 5 g of fat-free livers are extracted with 250 cc of hot water (90°C). The water extracts are washed with chloroform to remove the chloroform-soluble matter. Chloroform remaining in water layer is evaporated off under reduced pressure. Then KOH is added to the water extracts ($n/2$ KOH). Alkaline solution thus gained is exposed to the light of 500-watt-lamp for 2 hours at the distance of 20 cm. During exposure to the light the solution must be kept below 20°C. Thus the lactoflavin in the sample is converted to lumilactoflavin. Then the solution is acidified with HCl (pH 5) and extracted with chloroform. Chloroform extracts are collected and dried with anhydrous Na_2SO_4 and evaporated to small volume. Lumilactoflavin content of the solution is determined with Pulfrich photometer using filter S 47. The experimental results are as follows:

Table I.

Species	Fishing Season	Locality	Sex	Body Length cm.	Body Wt. g.	Liver Wt. (%) / Body Wt.	Moisture Content of Liver (%)	Oil Content of Liver (%)	C. L. O. U. of Liver Oil	Lactoflavin in 100g Fresh Liver (γ)	Lactoflavin in 100g Dry Liver (γ)	Lactoflavin in 100g Fat-Free Dry Liver (γ)
Neothunnus macropterus	Jan. 28th. 1940	Parao	Male	121	41500	0.430	72.0	2.80	210	1346	4806	5340
			Male	117	38200	0.477	72.4	2.04	147	955	3462	3738
			Male	85	13900	0.575	72.5	3.25	84	647	2352	2667
			Female	121	39000	0.680	72.0	2.38	420	1093	3903	4266
			Female	115	30200	0.682	71.0	3.25	—	1375	4741	5340
			Female	108	27300	0.623	71.0	3.37	—	830	2863	3240
Katsuwonus vagans	Dec. 16th. 1940	Parao	Male	44	2120	1.320	66.7	4.57	49	1096	3292	3816
			Male	39.2	1455	1.685	59.5	15.43	21	903	2228	3600
			Male	35	1090	1.74	61.5	15.42	5.2	216	561	936
Theragra chalcogramma	Feb. 8th. 1941	Hokkaido	—	36～45	450～800	2.61	53.3	20.4	98	726	1554	2760
			—	27～35	200～400	2.40	40.1	34.86	12.6	646	1079	2580

Scomber japonicus	Oct. 9th. 1940	Izu	Male	33.5	390	1.47	68.7	6.28	—	537	1717	2148
			Male	21.8	138	2.62	71.6	3.36	—	93	326	370
	Sep. 12th. 1941	Shiogama	——	25.8	115.5	0.847	—	—	—	370	—	—
			——	19.2	98.0	2.44	—	—	—	175	—	—
Makaira mazara	Jan. 30th. 1940	Parao	Male	184	58125	0.654	73.6	4.39	560	1508	5711	6850
			Male	171	53256	0.438	60·7	16.62	84	737	1876	3250
Cyprinus carpio	Nov. 10th. 1941	Chiba	Male	33.0	—	—	68.6	3.91	—	1327	4227	4828
			Male	16.2	—	—	70.7	2.77	—	1053	3595	3970
Kareius bicoloratus	Oct. 30th. 1940	Ibaragi	Female	44.3	1745	2.44	60.0	15.0	7	536	1341	2145
			Female	28.8	520	1.96	49.3	25.7	0.6	209	412	836
			Female	26.7	448	2.28	44.8	30.2	1.3	111	201	444
Sebastodes baramenuke	Nov. 1941	Iwate	Male	52.0	2940	1.02	70.0	7.33	450	202	672	890
			Male	39.8	1621	1.02	67.0	10.2	350	159	482	698
			Female	54.0	3632	1.62	58.0	19.3	630	496	1181	2185
			Female	38.5	1480	1.70	65.5	11.5	350	96	278	417
Pristipomoides sieboldii	Nov. 23th. 1940	Izu	Male	60.0	5965	0.65	58.1	12.4	110	104	248	353
			Male	58.0	4960	0.57	57.7	12.8	45	69	156	234
Squalus suckleyi	Nov. 4th. 1941	Izu	Female	66.0	2330	4.60	41.7	47.7	5.4	121	207	1138
			Female	61.0	2135	6.90	34.0	57.0	3.5	72	109	870
Paracaesio caeruleus	Dec. 1941	Okinawa	Male	38.2	1280	0.353	73.2	3.41	12	8374	31245	35800
			Male	32.0	943	0.284	72.7	3.89	Trace	132	483	563

Table II.

Species	Fishing Season	Locality	Sex	Body Length cm.	Body Wt. g.	Liver Wt. / Body Wt. (%)	Moisture Content of Liver (%)	Oil Content of Liver (%)	C. L. O. U. of Liver Oil	Lactoflavin		
										in 100g Fresh Liver (γ)	in 100g Dry Liver (γ)	Fat-Free Dry Liver (γ)
Germo germo	Mar. 27th. 1941	Izu	——	49～64	5812～6637	1.05	72.2	2.16	92.5	2621	9427	10222
			——	65	6037	1.05	72.2	2.16	—	2433	8751	9490
Thunnus orientalis	Mar. 6th. 1939	Chiba	Male	191	136500	1.09	52.0	11.54	33	2625	5469	7200
		Russun	——	—	—	—	60.4	19.57	420	4302	10864	21480
		〃	——	—	—	—	62.6	13.69	350	3998	10688	16860
Neothunnus macropterus	Oct. 1940	Parao	——	—	—	—	71.7	2.04	245	663	2344	2526
Katsuwonus vagans	Feb. 16th. 1940	Parao	Female	44	3750	1.74	68.2	4.19	50	1016	3195	3680
Xiphias gladius	Jan. 22th. 1941	Chiba	Male	200	148500	0.96	63.8	5.38	1000	1301	3594	4222
	Mar. 2th. 1941	Chiba	Male	158	95250	1.70	—	—	62	—	—	665
Makaira mazara	Jan. 30th. 1940	Parao	Male	184	58125	0.65	73.6	4.39	560	1508	5711	6850
			Male	171	53250	0.44	60.7	16.62	84	737	1876	3250

Epinephelus poecilonotus	Mar. 17th. 1941	Izu	——	38.4	1875	1.01	60.8	3.80	11	1439	3671	4065
Epinephelus caruleo-punctatus	Apr. 1941	Parao	——	95	356000	2.39	54.4	16.56	14.7	77	169	266
Etelis carbunculus	Nov. 15th. 1940	29°30′～129°28′30″	Male	53	3740	1.71	74.2	3.41	126	470	1822	2100
Belaenoptera musclus	Jan. 9～16th. 1939	Antarctic	Male	2.64m.～2.79m.	—	—	70.2	4.21	—	1820	6107	7112
			Male	2.31m.～2.64m.	—	—	70.2	2.63	336	1691	5675	6224
			Male	2.15m.～2.31m.	—	—	—	1.98	90	—	—	4089
			Female	2.31m.～2.64m.	—	—	75.3	3.61	196	1200	4854	5688
Balaenoptera physalus	Jan. 9～16th. 1939	Antarctic	Male	1.81m.～2.15m.	—	—	—	1.78	84	—	—	7556
			Female	2.15m.～2.30m.	—	—	—	2.11	5.0	—	—	6578
Megaptera nodosa	Jan. 9～16th. 1939	Antarctic	Male	1.45m.～1.65m.	—	—	80.1	2.17	49	1876	9426	10580
			Male	1.30m.～1.65m.	—	—	73.5	3.03	—	1627	6140	6933
			Male	1.15m.—1.30m.	—	—	76.6	2.69	98	1399	5979	6756
			Female	1.30m.～1.65m.	—	—	74.2	2.94	147	1503	5828	6578
Cyprinus carpio	Nov. 10th. 1941	Chiba	Male	33.0	—	—	68.6	3.91	—	1327	4220	4828
			Male	16.2	—	—	70.7	2.77	—	1053	3595	3970
Anguilla japonica	Sep. 23th. 1941	Kanagawa	——	—	375	—	—	—	—	80	—	—
			——	—	—	—	—	—	—	14.5	—	—
Oncorhynchus nerks	Dec. 5th. 1939	Kamchatka	——	—	—	—	66.7	8.30	75	718	2154	2870
Sebastodis baramenuke	Mar. 1939	Miyagi	Male	—	—	—	58.0	12.0	150	270	643	900
Scoliodon walbeemi	May 4th. 1941	Parao	Male	132	34000	0.47	46.2	36.1	0.44	299	556	1690
Lamma cornubica	Jan. 22th. 1941	Chiba	Female	185	98250	6.42	33.8	38.8	21	1145	1729	4178
Cynias manzo	Jan. 20th. 1941	Chiba	Female	72	2140	9.35	44.4	29.4	—	545	980	2080
Pseudotriakis acreges	May 12th. 1941	Izu	Male	130	14800	8.12	44.4	35.5	0.62	200	360	995
Squalus brevirostris	Nov. 4th. 1941	Izu	Female	77	4550	6.50	32.0	59.2	5.25	325	477	3689
Etmopterus pusillus	Nov. 4th. 1941	Izu	——	23	182	7.00	16.0	75.1	1.2	435	518	4888
Chimaera phantasma	Nov. 4th. 1641	Izu	——	—	—	—	48.0	42.6	9.0	812	1561	8636
			——	—	—	—	40.5	45.2	0.52	1085	1824	7589
Etmopterus lucifer	Nov. 4th. 1941	Izu	——	30	158	8.80	60.0	30.9	0.7	278	696	3060
Squalus suckleyi	Nov. 4th. 1941	Izu	Female	66	2330	4.60	41.7	47.7	5.4	121	206	1138
			Female	61	2135	6.90	34.0	57.7	3.5	72	109	870
Symonodon ringens	Nov. 4th. 1941	Izu	Female	82	3780	17.5	13.3	76.7	3.5	14	16	137
Galeorhinus griseus	Nov. 4th. 1941	Izu	Male	82	3330	4.80	41.7	44.8	35	65	112	483

According to these results, it is recognised that the fluctuation of the lactoflavin content in livers is fairly large.

In the same species the livers of older fish contain more lactoflavin than those of younger fish (Table I).

On the Vitamin C and Glutathione Contents of Mulberry Leaves.

(pp. 379～393)

By K. KATAI.

(Department of Agriculture, Kyûshû Imp. University; Received January 9, 1942.)

On the Dehydrogenase Action in the Sliced Brain Tissue of the Rat.

(pp. 394～396)

By Tetutaro TADOKORO and Tuneyuki SAITO.

(Hokkaido Imperial University; Received December 17, 1941.)

Untersuchug über Fett und Öle der Getreidefenniche. I. Freie Fettsäure.

(SS. 397～401)

Von Tetsujiro OBARA.

(In der Chem. Abteilung der Landwirtschaftl. Erziehungsfachschule zu Tokyo. Eingegangen am 6. 12. 1941.)

On the Quantitative Determination of Pyrethrine in Mosquito Coils.

(pp. 402～404)

By Masao NISHIKADO.

(Research Laboratory of Azumi-Dai-Yakubo Co.; Received January 22, 1942.)

On the Acid Fermentation of Aspergillus niger. (Part I.)

(pp. 405～414)

By Kinichiro SAKAGUCHI and Sinitiro BABA.

(Agricultural Chemical Laboratory, Tokyo Imperial University; Received December 11, 1941.)

Recentry Sakaguchi, Asai and Munekata[1] have shown that Rhizopus G 36, which produces solely lactic acid from glucose, formed remarkable quantities of fumaric acid instead of lactic acid in the medium containg ethyl alcohol or acetic acid as the sole source of carbon.

In the present work the authors have tried to confirm whether an analogous case might be found, using two strains of *Asp. niger*, one of which belongs to the so called citric acid former and the other to the gluconic acid former. The carbon sources used are glucose (C_6), glycerol (C_3), pyruvic acid (C_3), ethyl alcohol (C_2) methanol and formic acid (C_1). The summary of the results obtained is as follows:

The yields of *citric acid* against the substrates consumed:—

Substrates	*Asp. niger* var. No. 2 The citric acid former	*Asp. niger* var. No. 25 The gluconic acid former
Glucose	78～80%	0
Glycerol	2.7	1.3%
Na-pyruvate	0	0
Ethanol	2.0	2.0
Na-formate	0	0
Methanol	0	0

The Yields of *oxalic acid* against the substrates consumed:—

Glucose	0	0
Glycerol	0	2.1%
Na-pyruvate	7.5～8.5%	0
Ethanol	4.1	1.0
Na-formate	35.0	30.0
Methanol	10.0	6.0

The yields of other prodcucts:—

The Substrates added / Products	*The citric acid former* (*Asp. niger* var. No. 2)				
	Glycerol (80 g)	Na-pyruvate (20～50g)	Ethanol (60 g)	Na-formate (4 g)	Methanol (4 g)
Succinic acid	0	0.05 g	0.20 g	0	0
Fumaric acid	0	0.10	0.25	0	0
l-Malic acid	0	0.30	0.20	0	0
Pyruvic acid	0	—	0	0	0
Acetic aced	0	0	0.25 (as Ag-salt)	0	0
Glycolic acid	0	0	0.20	0	0
Acetaldehyde	0	0	+	0	0
Ethanol	0	0	—	0	0

The Substrates added / Products	*The gluconic acid former* (*Asp. niger* var. No. 25)				
	Glycerol (80 g)	Na-pyruvate (20 g)	Ethanol (60 g)	Na-formate (10 g)	Methanol (10 g)
Succinic acid	0	0.05 g	0	0	0
Fumaric acid	0	0.20	0.09 g	0	0
l-Malic acid	0	0	0.15	0	0
Pyruvic acid	0	—	0	0	0
Acetic acid	0	0	0	0	0
Glycolic acid	0	0	0.05	0	0
Acetaldehyde	0	0	0	0	0
Ethanol	0	0	—	0	0

(1) This Journal **17**, 19 (1941).